

National Aeronautics and Space Administration

NASA Earned Value Management (EVM) Update

EVM World

**Jerald Kerby
May 2013**

evm.nasa.gov

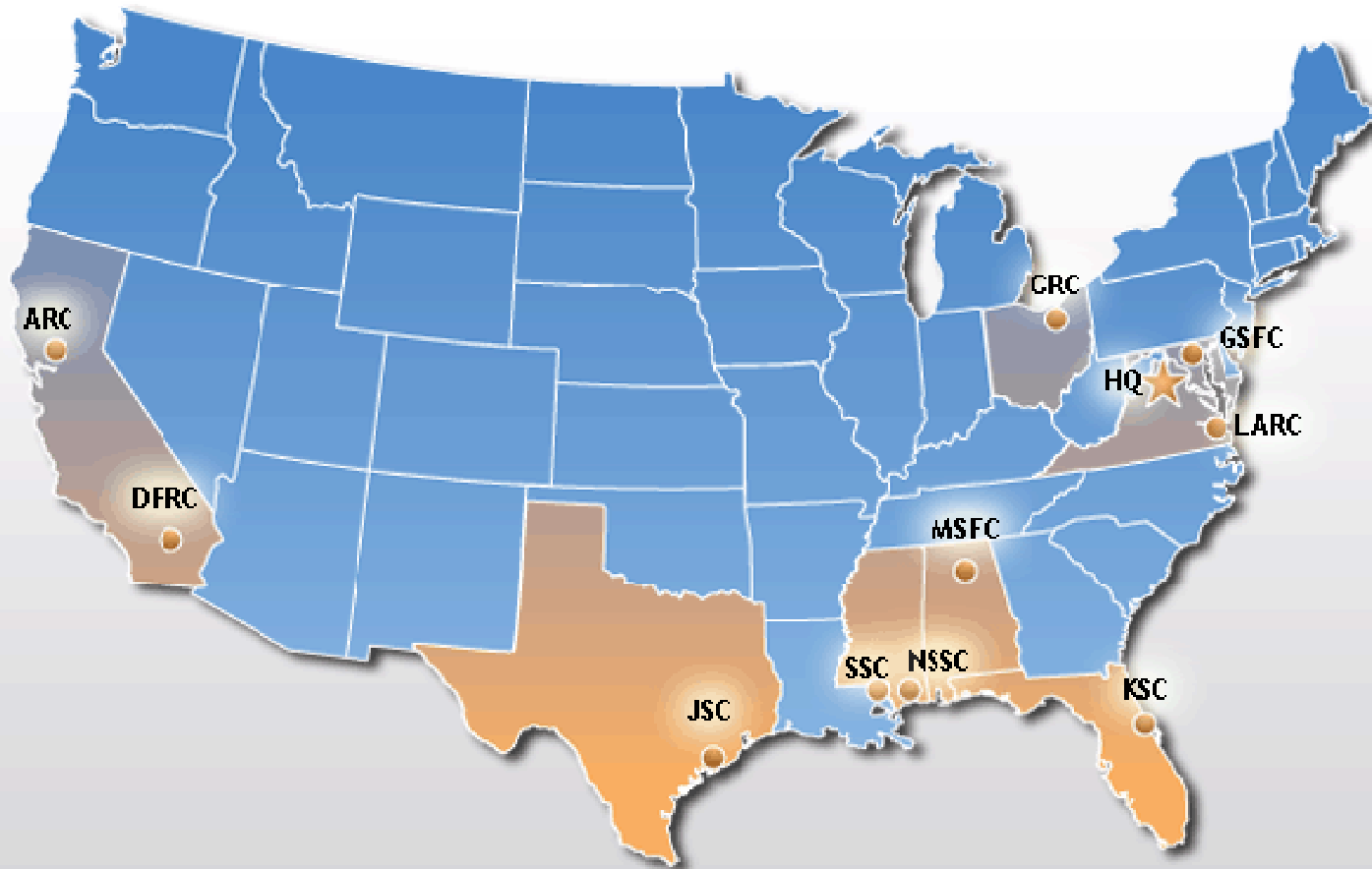
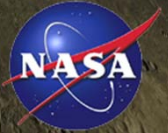


Outline



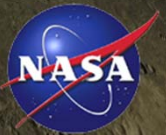
- NASA Centers
- EVM Requirements
- EVM Assessment/Maturity Model
- EVM Goals/Partners
- EVM Capability
- Surveillance
- Lessons Learned
- Available EVM Resources
- Organization Focal Points
- GAO Audit
- Summary
- Questions

NASA Centers



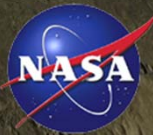
10 Centers
1 FFRC

(Click on Center location to view Center pages)

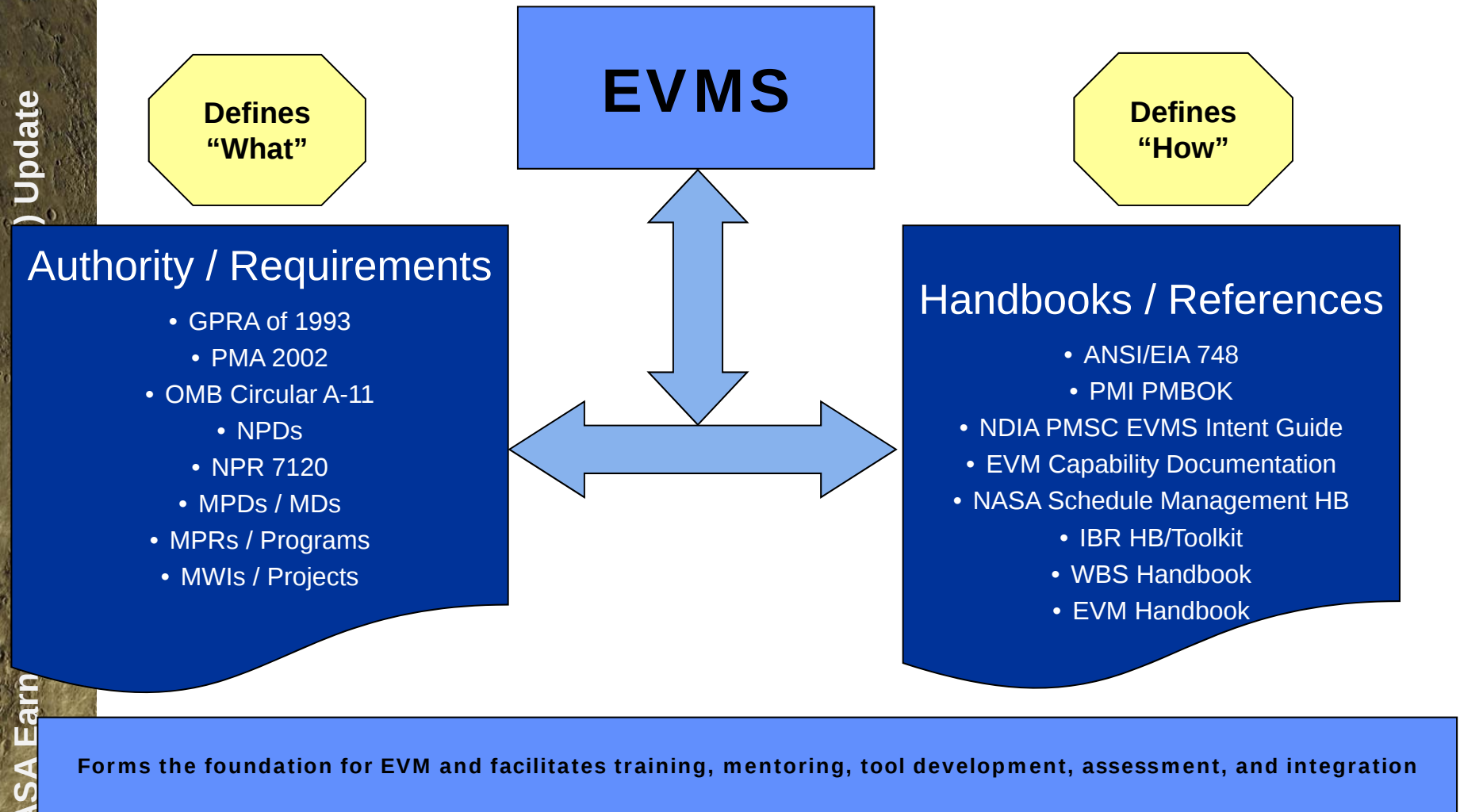


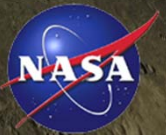
Overarching EVM Requirements

- **OMB Circular A-11** requires for total project EVM (in-house and contracted effort) to comply with the ANSI/EIA-748 guidelines
 - Details are in the **Capital Planning Guide Supplement**
- The OMB Circular A-11 requirement has been flowed down to the current version of **NPR 7120.5**



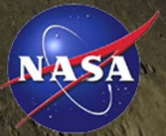
NASA Document Hierarchy





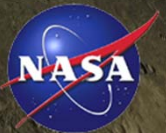
NPR 7120 EVM Requirements

- **Planning** begins during **Formulation**.
- EVM is applied in **phases C and D** to **projects** with an estimated life cycle cost **>\$20 million** and to **Phase E modifications, enhancements, or upgrades** with an estimated cost **> \$20 million**.
- EVM system complies with the **guidelines** in ANSI/EIA-748 and is described in the **Project Plan**.
- **EVM** system requirements are **flowed down** to applicable **suppliers**. (NFS 1834 is applied to contractors.)
- The project's **Performance Measurement Baseline (PMB)** is **established in Phase B** in preparation for **KDP C approval** and is **assessed** during **a review of the integrated baseline for the project**.
- **Project** EVM reporting begins no later than **60 days** after the start of Phase C. **Contract** EVM reporting begins no later than **90 days** after contract award.



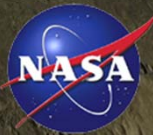
EVM Requirements - Excerpts of Interest

- 7120.5D: (Past)
 - (2) The Project's EVM approach is in-place by KDP C and implemented in Phase C through KDP E.
 - (4) As a minimum, **EVM principles, as defined by ANSI/EIA-748, Earned Value Management Systems**, apply from KDP C through KDP E, if the project's life-cycle cost is at or greater than \$20M.
- 7120.5E (Present)
 - 2.2.7 Programs, at the discretion of the MDAA, projects in phases C and D with a life cycle cost estimated to be greater than \$20 million and Phase E project modifications, enhancements, or upgrades with an estimated development cost greater than \$20 million shall perform earned value management (EVM) with an **EVM system that complies with the guidelines in ANSI/EIA-748, Standard for Earned Value Management Systems.** *Use of the NASA's EVM capability and processes, will ensure compliance with the ANSI standard. This capability allows tailoring to match the individual needs of the program or project, while still meeting the ANSI-748 guidelines.*
 - 2.2.8 EVM system requirements shall be applied to applicable suppliers in accordance with the NASA Federal Acquisition Regulation (FAR) Supplement 1834.201 and to in-house elements.
 - 2.2.9 In accordance with the NASA Federal Acquisition Regulation (FAR) Supplement 1834.201, **EVM system requirements shall be applied to applicable suppliers and to in-house work elements.** For contracts that require EVM, a Contract Performance Report (CPR), Integrated Master Schedule (IMS), and Work Breakdown Structure (WBS) are required deliverables and the appropriate data requirements descriptions (DRDs) included in the contract and/or agreement.
 - 2.2.10 For projects requiring EVM, **Mission Directorates shall conduct an pre-approval integrated baseline review as part of their preparations for KDP C** to ensure that the project's work is properly linked with its cost, schedule, and risk and that the systems are in place to conduct EVM.

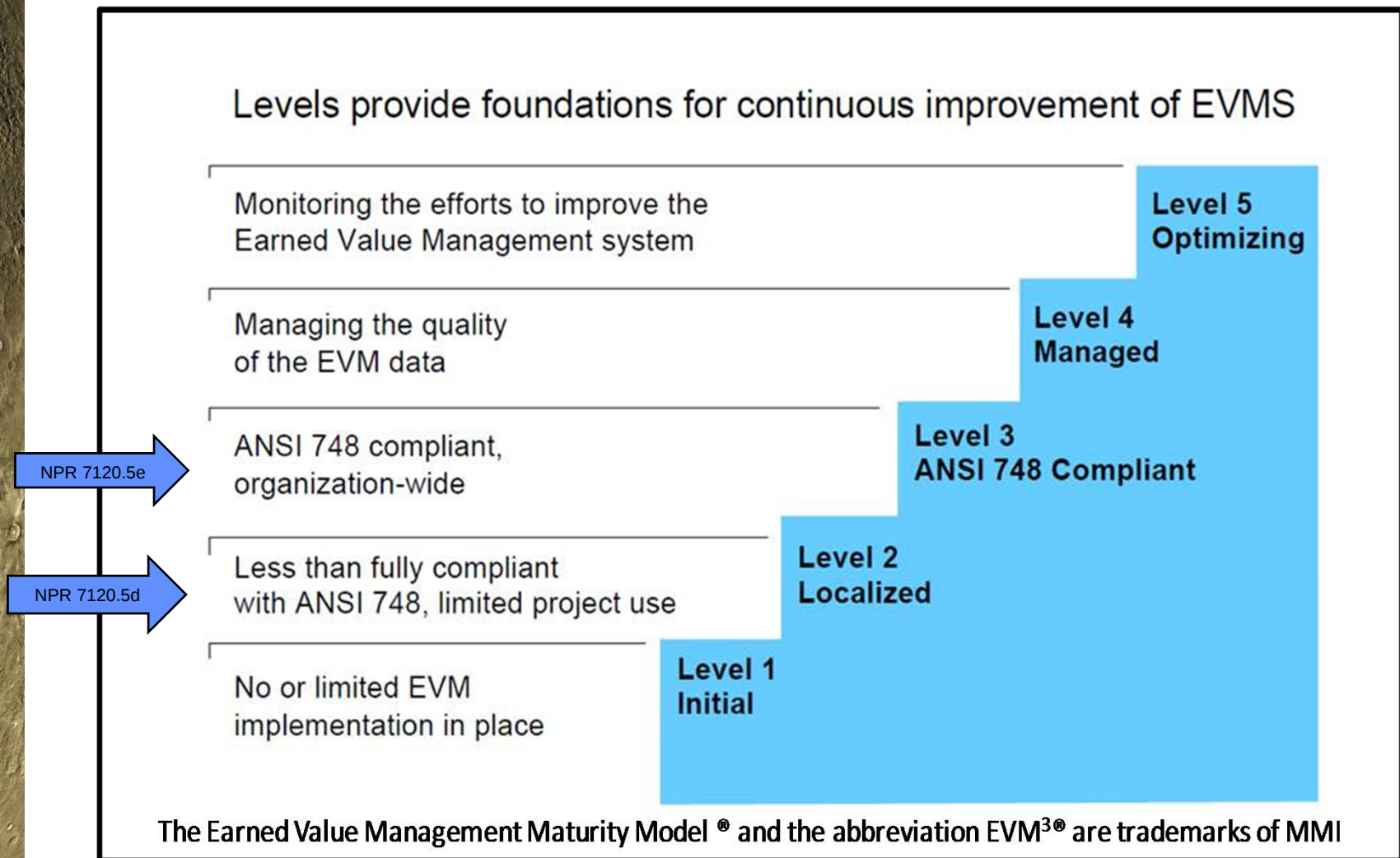


EVM Requirements

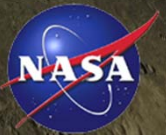
NASA Projects		
> \$50M	\$20M to \$50M	\$0 to \$20M
32 Guidelines NASA System	32 Guidelines NASA System	Non-EVM Performance Mgmt
Flow-Down to Contractors		
> \$50M	\$20M or More	Less than \$20M
32 Guidelines Validated Full EVM Terms and Conditions of DRDs	32 Guidelines Compliance Full EVM Terms and Conditions of DRDs	Non-EVM Performance Mgmt Performance Mgmt Terms and Conditions of DRD
All Supporting Contractors		



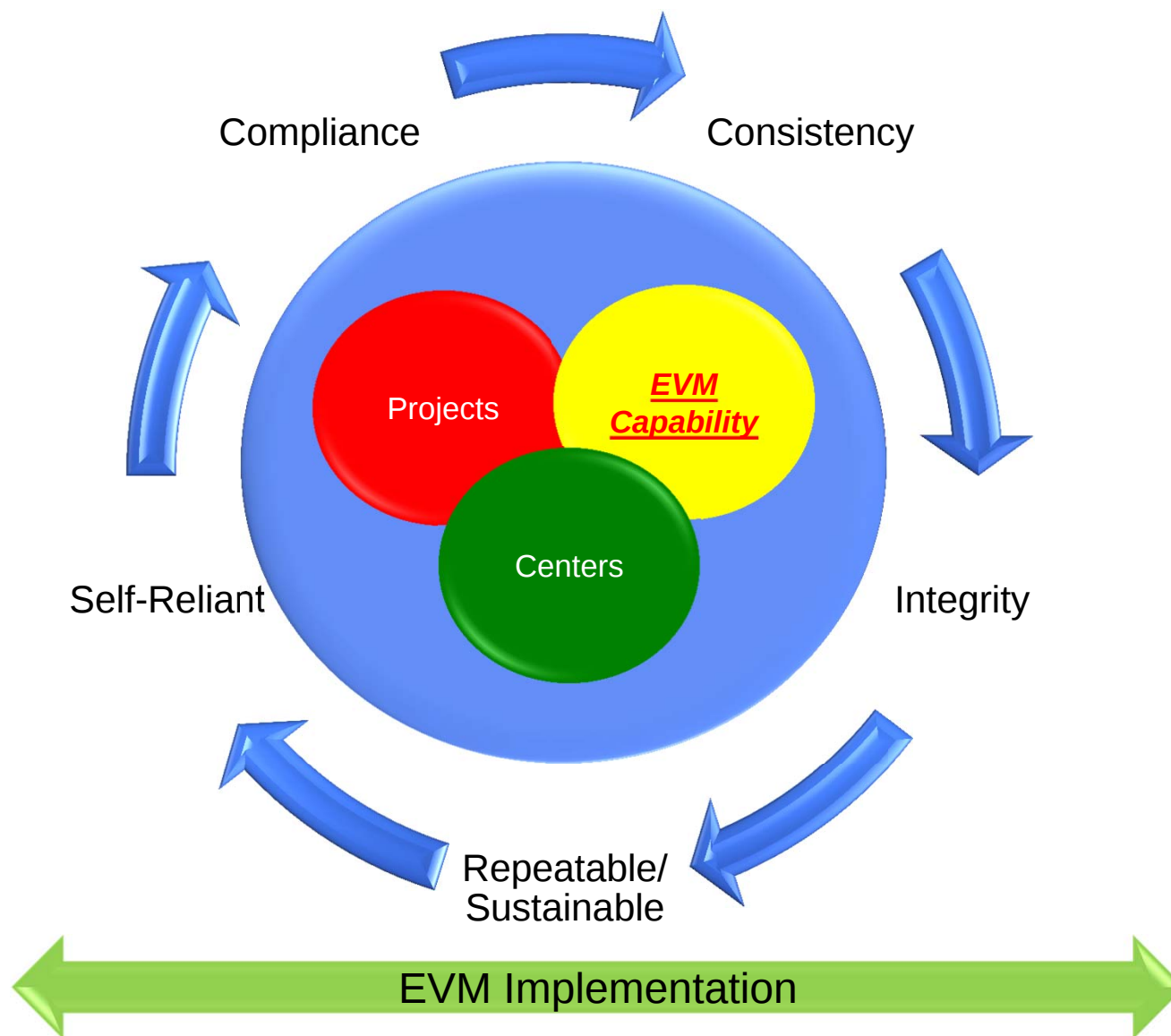
EVM Assessment/Maturity Model

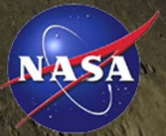


- Requirements and Process in place
- Future Implementation will key



NASA EVM Goals/Partners

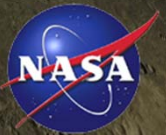




What is the NASA EVM Capability?

Overall Objective was to develop an Agency EVM capability that complies with the guidelines in ANSI/EIA-748 and test through two pilots, refine and finalize EVM process and documentation based on test results.

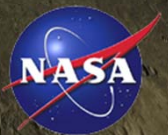
- A **common agency EVM capability/process** that complies with the guidelines in ANSI/EIA-748 for in-house projects
- **Documented** with supporting handbooks, instructions, workarounds, etc.
- **Tested** through two pilot projects, Extra-vehicular Activities (EVA) and Ice, Clouds and Land Elevation Satellite (ICESat) II
- **Approved** by independent Peer Review Team with representation from each Mission Directorate and Center
- Reported to a senior level Agency Steering Committee represented by each Mission Directorate and Center
- Approved **initial (phased) rollout** by the Agency Project Management Council (APMC)
 - **Space Launch System (SLS)** - (MSFC)
 - **ICESat II** (GSFC)
 - Focus on EVM flow-down to **contracts across the Agency**



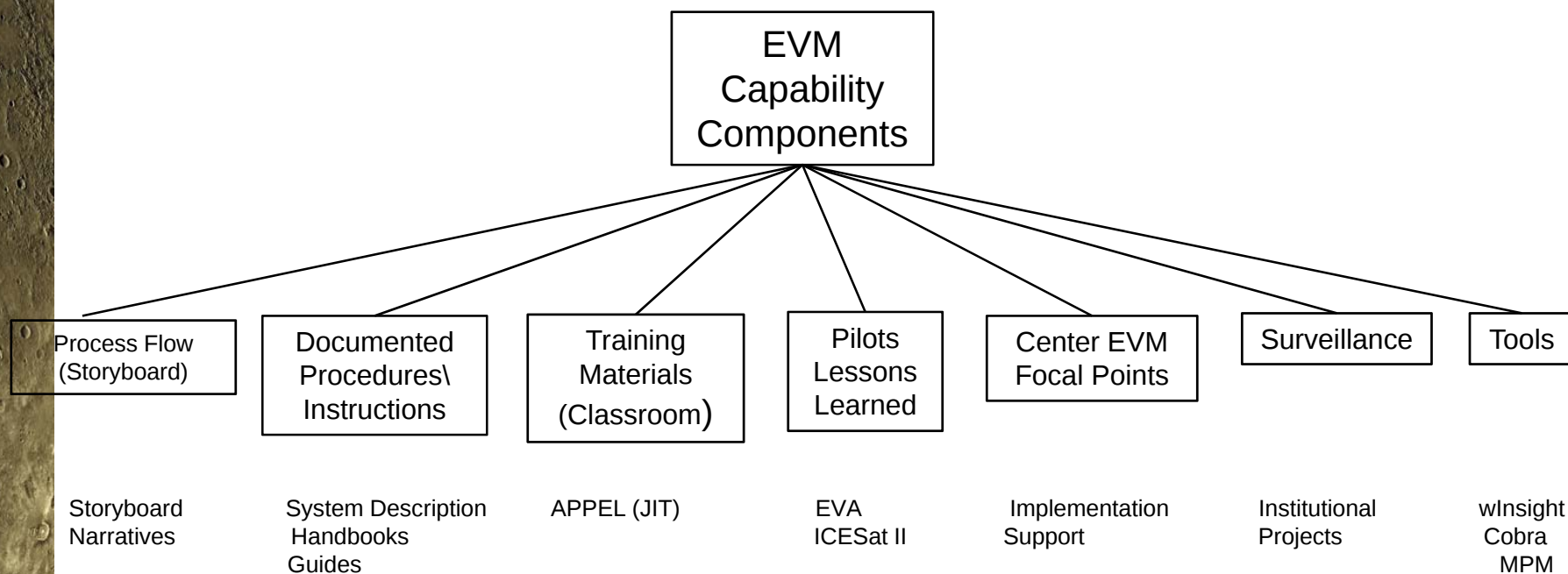
Products Developed by EVM Capability

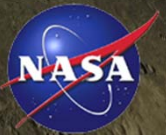
- ✓ EVM process flow diagrams (Storyboard)
- ✓ System Description (Detailed Process)
- ✓ Narratives (Summary Process)
- ✓ Project-Control Account Manager's (P-CAM) Reference Guide
 - Provides a quick reference for Technical Managers
- ✓ EVM Handbook
 - Overall Agency and general EVM guidance
- ✓ Pilots results
 - Lessons Learned/Issues/Workarounds/Recommendations
- ✓ EVM Acceptance/Surveillance Strategy
 - Acceptance Strategy
 - Surveillance Overview
- ✓ Software Acquisition Strategy
 - Hardware/Software access/acquisition
- ✓ Training Modules by Process Area
 - Modularized training for each process area

Latest documents are on the www.nen.nasa.gov website under the EVM sub community folder



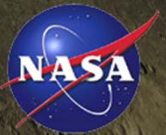
EVM Capability Toolbox





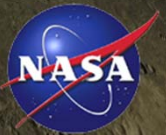
Maintaining Integrity through Surveillance

- Surveillance is a key function to ensure usefulness as a management tool and compliance with external mandates.
- Surveillance Frequency (programmatic/institutional)
 - Recurring assessment as part of the lifecycle reviews and
 - NPR 7120.5 Center Surveys
- Mature EVM Capability for improved support of multi-center programs and projects

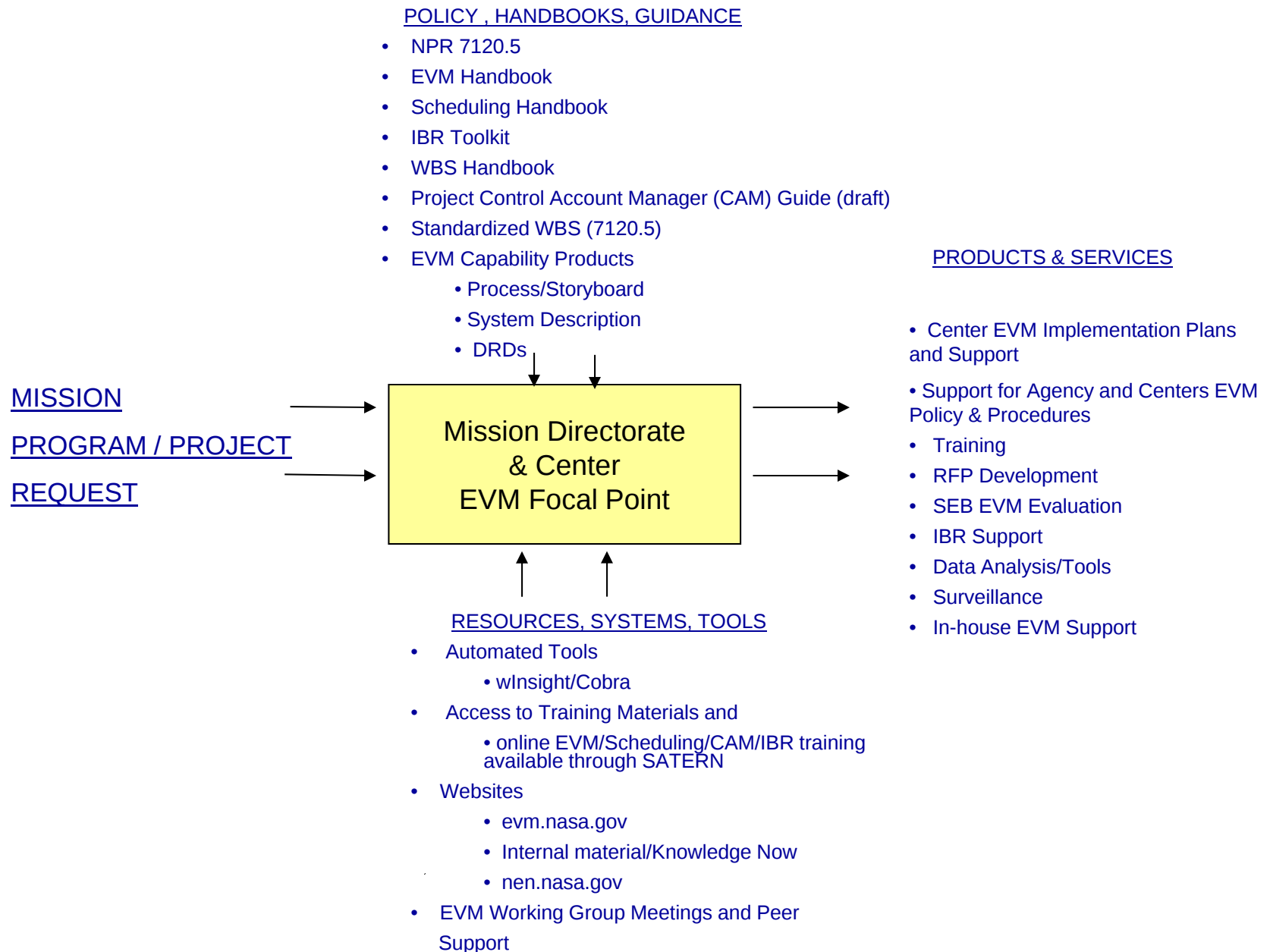


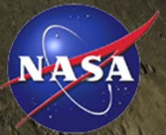
Top 5 Lessons Learned (linked to remaining risks)

1. Projects have to consider EVM Implementation from **Day 1** of project
 1. Each time a **charge code is created it effectively changes the technical WBS** for the life of the project
 2. Where will the work be controlled and performance taken? EVM construct must be considered for **control accounts and work packages.**
2. **Support Contractor costs** will continue to be a constraint unless proper cost **reporting requirements** are flowed down to contracts
 - Support Contracts are often **owned by other organizations** outside of the projects with no EVM requirements.
3. **Work Authorization agreements** that document an agreement of scope, schedule and budget by both sponsor and performing orgs. are fundamental to the implementation of EVM
4. **PP&C skills must be strengthened** to support EVM and project management
5. **Senior Level Management support** is needed across the agency with the change management process



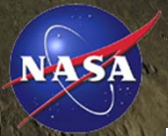
NASA EVM Resources





Organizational EVM Focal Points

ORGANIZATION	NAME	EMAIL ADDRESS	TEL
Headquarters - Focal Points			
IPCE	Charles Hunt	charles.d.hunt@nasa.gov	202.358.0803
Procurement	Carl Weber	carl.c.weber@nasa.gov	202.358.1784
OCIO	John Bosco	john.f.bosco@nasa.gov	202.358.1352
OCFO	Louis Barbier	louis.m.barbier@nasa.gov	202.358.1421
Mission Directorates - Focal Points			
SMD	Voleak Roelum	vroeum@nasa.gov	202.358.0941
HEOMD	Cris Guidi	cristina.guidi-1@nasa.gov	202.358.1777
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Goddard	Stephen Shinn	stephen.a.shinn@nasa.gov	301.286.5894
	Julie Baker	julie.m.baker@nasa.gov	301.286.8096
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Langley	Dr. Barry Lazos	barry.s.lazos@nasa.gov	757.864.5731
Marshall - Chair	Jerald Kerby	gerald.g.kerby@nasa.gov	256.544.3243
Stennis	Deborah Norton	deborah.s.norton@nasa.gov	228.688.1168
	Robert Ross	robert.b.ross@nasa.gov	228.688.2320



NASA EVM Website (Homepage)

evm.nasa.gov

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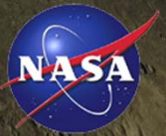

[+ NASA Home > EVM](#)
The mission of the NASA Earned Value Management (EVM) website is to provide a primary on-line reference point for EVM theory, application, and use as an integrated project management process within NASA.
[OVERVIEW](#)
What is EVM?
EVM is an integrated management control system for assessing, understanding and quantifying what a contractor or field activity is achieving with program dollars

- Integrates technical, cost, schedule, with risk management
- Allows objective assessment and quantification of current project performance
- Helps predict future performance based on trends.

EVM provides project management with objective, accurate and timely data for effective decision making
Policy References
OMB Circular A-11, Part 3; NPR 7120.5 Program/Project Management Processes and Requirements; Industry Guidelines, ANSI/EIA-748 Standard for EVM Systems

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**Curator: MITS**
NASA Official: Jerald Kerby
Last Updated: January 22, 2010
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Rover Prototype Set To Explore Greenland Ice Sheet

Submitted by [NASA Engineering Network](#) from JPL on May 02, 2013

NASA's newest scientific rover is set for testing May 3 through June 8 in the highest part of Greenland.

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WELCOME

Welcome to the **NASA Engineering Network**, where engineers may access Lessons Learned; interact with their discipline's Technical Fellow, subject-matter experts, and practitioners through Communities of Practice; search many NASA repositories of interest, and find tools and resources.



Mike Ryschkewitsch
NASA Chief Engineer

00:00 00:00

SPOTLIGHT

OCE Events: April 2013



- 2-3 - Aerospace Safety Advisory Panel
- 3 - SELDP Selection Interview/Decision Mtg
- 16 - Program Management Council
- 16 - IEEE/Keynote Systems Conference 2013
- 18 - ISS ATV 4 "Albert Einstein", Ariane 5
- 24 - ISS Progress 51
- 24 - Baseline Performance Review
- 26 - Strategy Implementation Planning (Satellite Communication Review)
- 30 - Strategic Management Council Face-to-Face

Young Professionals Blogs



The Young Professional's Blog is an area for early career engineers to showcase their work, the tools that they use, and what it is like to work as young professional at NASA. Follow, collaborate, and develop a cross-agency understanding of a new generation of engineers that are eager to share their career development.

COMMUNITY OF PRACTICE

Flight Mechanics



Flight Mechanics encompasses atmosphere definition and measurement (earth and planetary trajectory design and analysis; modeling for simulation; flight mechanics simulation and analysis (including Monte Carlo methods); flight measurement techniques; flight testing...

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DESIGN PRINCIPLES

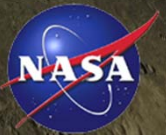
To promote excellence in design and avoid known risk top level design principles and design requirements from across the Agency are listed here.



NASA-NPR-7120.5E / 7120.7 / 7120.8
NASA Space Flight / Information Technology / Research & Technology Program and Project Management Requirements

FEATURES

[Organization Charts](#) [Collaboration Tools](#)



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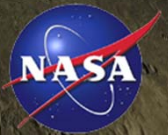
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Avionics	Human Factors	Propulsion	Knowledge Management	
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OVERVIEW

Earned Value Management (EVM) is an integrated management control system for assessing, understanding and quantifying what a project is achieving with its resources. EVM integrates technical, cost, and schedule with risk management; it allows objective assessment and quantification of current project performance, and helps predict future performance-based trends.

WELCOME

Welcome to the Earned Value Management (EVM) sub-community of the Program/Project Management Community of Practice.

Lead: [Jerald Kerby](#)
Facilitators: [Keri Murphy](#)

COMMUNITY LINKS

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Search and locate Headquarters, Mission Directorate, and Center EVM Focal Points

NASA Public Links

View information from NASA's EVM public portal

Document Repository

Find EVM process, reference, and training documents

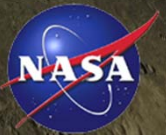
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Submit an idea or suggestion to the community

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Focus Areas in response to GAO EVM Recommendations

- Corrective action plans to focus on the following areas
 - Rollout of EVM Capability (NASA EVM Process)
 - Conduct Skills Assessment
 - Develop Change Management Plan
 - Strengthen EVM Surveillance
- NASA will periodically report to GAO on the progress that the Agency has made to the recommendations corrective action plan



Architecture

- ✓ Processes
- ✓ Documentation
 - ✓ Tools
- ✓ Customer Support

Implementation

- ✓ Requirement (7120)
- ✓ Roll Out Support
- ✓ Surveillance Program

Education & Training

- ✓ Curriculum
- ✓ Training Materials
 - ✓ Target Audiences

Everything is in place for implementation



Questions?